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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,978	09/24/2001	Tetsu Yamamoto	1998/F-151	1269
23416	7590	07/07/2005	EXAMINER	
CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899			WILLS, MONIQUE M	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/868,978

Applicant(s)

YAMAMOTO, TETSU

Examiner

Monique M. Wills

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 8-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 8-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/24/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Request for Continued Examination***

The request filed on December 30, 2004 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/868,978 is acceptable and a RCE has been established. An action on the RCE follows.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 & 8-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Sansone et al. WO 98/14505.

Sansone teaches a method of producing a polymeric membrane (abstract). With respect to claim 1, Sansone teaches immersing a basic polymer (page 5, lines 5-10) in strong acid at a temperature of 80° for 1 hour (page 8, lines 14-25). The limitation in claim 1, with respect to the strong acid

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having a concentration sufficient to impregnate the basic polymer with six or more strong acid molecules per polymer repeating unit of the basic polymer, is considered to be an inherent property of the strong acid as set forth in the prior art, because Sansone employs the same phosphoric and sulfuric acid solvents set forth by Applicant.

With respect to claim 2, the immersion time is between about 1 to 60 minutes (page 8, lines 24-26). In re claims 8, 9 & 21-23, the strong acid is phosphoric acid (page 7, lines 15-20). As to claims 10, 11 & 21, the strong acid is sulfuric acid (page 7, lines 15-20). Concerning claims 12, 13 & 22-23, the acid solution generally contains an acid concentration of 5 to 100% (page 7, lines 15-20). With respect to claims 14 & 15, the selected polymers include, polybenzimidazoles (PBI), poly (pyrimidines), polyimidazoles, polybenzothiazoles, polybenzoxazoles, polyoxadiazoles, polyquinoxalines, polythiadiazoles and poly (tetrazapyrenes). See page 5, lines 1-13. In re claims 16-19 & 21, the immersion temperature can be up to 80°C and the immersion time is about 1 to 60 minutes (page 8, lines 20-26).

With respect to claim 20, the membrane is for use as an electrolyte in fuel cells (page 3, lines 25-30). The limitation in claim 20, with respect to the fuel cell comprising a pair of electrodes sandwiching the polyelectrolyte membrane, is considered to be an inherent structure of the fuel cell as set forth in the prior art, because Sansone teaches employing the polymer electrolyte membrane in fuel cells. Polymer electrolyte fuel cells, by definition, have

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electrodes circumscribing a polymer membrane imbibed with electrolyte solution. The membrane functions as both a separator and an ion conductor between the electrodes.

Therefore, the instant claims are anticipated by the prior art set forth.

### ***Response to Arguments***

Applicant contends that Sansone is not anticipatory because phase inversion-process employs an acid such as  $\text{H}_3\text{PO}_4$  having a concentration of about 75%. To the contrary, applicant necessitates a strong acid having a minimum concentration of not less than 80%. This argument is not persuasive. Sansone clearly teaches, on page 7, lines 15-20, the membrane may be soaked in phosphoric acid with a concentration of 5 to 100 wt%.

Applicant also contends that the reference is improperly relied upon, because Sansone teaches entrapping the acid in the polymer film. To the contrary, applicant's membrane forms an acid-base interaction that leaks acid immediately after the polymer is exposed to said acid. Also, the membrane of the reference would simply lose its acid during operation as a polymer electrolyte. This argument is not persuasive. Irrespective of whether the acid is entrapped (Sansone) or leaks (alleged by the instant method), the instant claims only require that the polymer is immersed in the acid. Sansone meets this limitation by subjecting the polymer to a coagulation bath, and immersing the polymer in a strong acid.

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

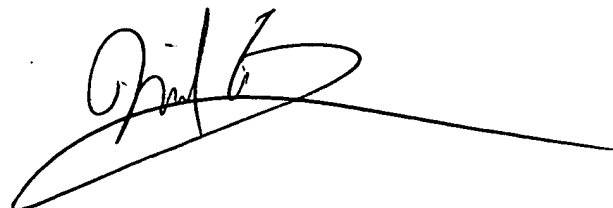
If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Michael Barr, may be reached at 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

6/25/05

A handwritten signature in black ink, appearing to read 'Michael Barr', with a long horizontal flourish extending to the right.

**MICHAEL BARR  
SUPERVISORY PATENT EXAMINER**